7.The database in Artificial Research by Application

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Probabilidad Imposible: The database in Artificial Research by Application

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A database is a collection of information for some particular purpose or over some particular field. In statistics, every single category or option must be defined or limited in quantitative terms, given an exact definition of what information we need to measure, and later, the results of these measurements must be added to the database.

In Impossible Probability the measurement of any quality of a subject or option is the transformation of a qualitative property into a factor of mathematical operations, which can be converted into positive data, for the description, inference, or prediction of the phenomena studied in synthetic sciences.

The definition of any data in quantitative terms is a warranty as well, which is defined in a positive way. Data is positive when its acceptance is independent of any ideological or political difference between different schools or paradigms.

Once we have a general definition of the database through the theory of Impossible Probability, it is time to give a definition of the database in the Artificial Research by Application, that, generally speaking, would be a collection of: information, taxonomies, classifications, files, categorizations, events, facts, phenomenon, characteristics of individuals and populations (physically, behavioural, psychologically), or any other thing, even any tool to use later; necessary in any artificial research processes made by the Artificial Research by Application, which through the information collected in its database, is going to be able to automatize the formation of empirical hypothesis within the synthetic science or synthetic academic field for what it has been created, and able therefore to criticize rationally the empirical hypothesis in order to make further rational decisions.

If the application finds some category, event, or phenomenon without a high percentage of similarity with those ones stored in the database, this new one must then be integrated into the database as a new one.

This process of including new categories, events, or phenomena in the database constitutes an auto-replication process, as the application can improve its components—particularly the database—without human intervention.

As first stage in the formation process of any Artificial Intelligence, either specific or global, for artificial research or any other purpose, a good definition of the concept of database is necessary according to the purpose for which it is going to be designed.

In order to have a clear idea about what kind of database is going to be necessary in Specific Artificial Intelligence for Artificial Research by Application, firstly is important to clarify what different models of database are going to be developed, taking the theory of Impossible Probability as a theoretical model, applied to Artificial Intelligence, Specific or Global. And among all possible databases, the exact purpose of the database in Specific Artificial Intelligence for Artificial Research by Application.

In Impossible Probability is necessary to distinguish, at least, among these models of databases:

- Database in Artificial Research by Application in a Specific Artificial Intelligence. In those Specific Artificial Intelligences for artificial research in synthetic sciences or synthetic academic fields where the artificial research is done by Artificial Research by Application, the database should include all information, data, taxonomies, classifications, files, categorizations, events, facts, phenomena, or characteristics of individuals or populations, or any other thing, even, tools if its necessary, that are going to be needed in the investigations with this technology. This is the model developed in this post.

- A unified database of Artificial Research by Application. In the future, after the completion of the unification process of all Specific Artificial Intelligence for Artificial Research by Application into a Global Artificial

Intelligence. Once the creation of a Global Artificial Intelligence has finished the completion of a global database, in addition to this global database it is going to be necessary the process of integration of the rest of specific databases of the rest of Specific Artificial Intelligences for artificial research in synthetic sciences and synthetic academic fields, into the GlobalArtificial Intelligence. This integration process should have different phases. In the first one the unification of all Specific Artificial Intelligences for ArtificialResearch by Application, and after that, the integration of all of them into the Global Artificial Intelligence. The unification process should finish with the integration of all these specific databases by application in only one, a unified database of Artificial Research by Application. Upon it, all the Specific Artificial Intelligences for Artificial Research by Application, from any synthetic science or synthetic academic field, could work together on only one unified database for Artificial Research by Application, the Unified Application. All Specific Artificial Intelligences for Artificial Research by Application, in any synthetic science or synthetic field, could match the measurements taken from real objects with the categories, events, and phenomena included in the unified database, forming and contrasting hypotheses at the same time from the unified database. And in case a new category, event, or phenomenon should be included, introducing improvements across the unified database at the same time. One unified database for all Specific Artificial Intelligence for Artificial Research by Application, whose hypothesis and decisions could automatically be integrated into the Global Artificial Intelligence.

- The database of Specific Artificial Intelligence for Artificial Research by Deduction in any synthetic science or synthetic academic field. In this case, the database is going to be a matrix, where each Specific Artificial Intelligence for Artificial Research by Deduction of each synthetic science or academic field must have its own matrix. The matrix should be formed by the definition of every factor, subject, option, category or any key point relevant to the research, that later on, in the second stage, the replication stage, is going to be measured constantly, receiving a flow of continuous measurements at any time. So, in the second stage, replication, this Specific Artificial Intelligence for Artificial Research by Deduction would fill directly the matrix with the flow of measurements related to every factor, subject, option, category, etc., storing all the information in the memory. And upon the measurements, by statistical methods, the automatic identification of high levels of correlations, identifying probabilities of cause and effect, and stochastic relations, which could be formulated automatically as a hypothesis, that later could be criticised rationally.

- The database of the Global Artificial Intelligence for Artificial Research by Deduction. A gigantic global database, a global matrix, firstly perhaps over a nation as an experiment that later could be extended over a whole continent, the entire planet, finishing with the inclusion of information that could come from the whole universe. Every single piece of information included must be defined in very exact and quantitative terms, allowing the necessary measurements constantly all the time, getting a flow of measurements at any time, stored continually in the memory, which, by statistics methods, and studying the evolution of the flow, the Global Artificial Intelligence could find high levels of correlations among factors, subjects, options, categories, or probable causes and effects, and stochastic relations. Upon the results, the formation of the empirical hypothesis contrasted later with the critical reason, in order to make further rational decisions.

Among all of these models of database developed under the Artificial Intelligence theory in Impossible Probability, the database object of this post is the first one: the database in Artificial Research by Application in a Specific Artificial Intelligence.

In other posts, I had set out some examples of Artificial Research by Application in Specific Artificial Intelligence for medical problems or astronomy. In this one, I will expose some others for different purposes, focusing on the explanation of how the database in this model of artificial research could work

The first example is applied to mineralogy, and the second one is to the physics of particles.

The first example would be a model of Specific Artificial Intelligence for Artificial Research by Application in Mineralogy. Firstly, the database would be an exact and full taxonomy of all kinds of minerals, rocks, pebbles, and every single kind of mineral, rock, pebbles, would be a category described in quantitative terms: from its possible chemical composition, resistance, hardness, to a definition of the colour in quantitative terms, or any possible other quality described in quantitative terms able to help in the artificial identification of any rock, mineral, pebble, from the reality, the synthetic world.

The description of every mineral, rock, or pebble in the database would be a category (in this case, the subject). Any mineral, rock, or pebble found in the synthetic world, the reality, would be a real object.

In the second stage of Artificial Research by Application, the replication of the research skills necessary for a scientific investigation, given the measurements of any real object, in this case, mineral, rock, or pebble collected from the real world, the Specific Artificial Intelligence could compare the measurements taken from the real object with the quantitative descriptions of every category in the database.

As a result of this comparison, the Artificial Research by Application should give a list of categories with the highest percentage of similarity between their quantitative descriptions and the measurements from the real object, categories as empirical hypotheses about the very nature of the real object taken from reality. Empirical Hypotheses that, if after rational criticism, are true, become rational hypotheses, forming part, at the same time, universally and provisionally, of the rational truth.

In case the real object found in reality, the synthetic world, does not match with any category in the database, the hypothesis must be formulated under the idea that this object belongs to a new category that must be included in the database. This automatic improvement in the database in the Specific Artificial Intelligence for Artificial Research in mineralogy must be considered as an auto-replication, improving its own database. One way, among others, of auto-replication, which means auto-improvement, and in much more developed models of auto-enhancement.

In this first example of the database in a Specific Artificial Intelligence for Artificial Research by Application in mineralogy, as application, the database would be a collection of categories (in this specific example, each category from the database corresponds to each kind of mineral, rock, pebble, taken from the mineral taxonomy). As a second stage of replication, upon the measurements of a real object, the comparison of the empirical measurements from the real object and the quantitative description of every category included in the database: that or those categories or categories with the highest percentage of similarity between its quantitative description with the quantitative measurements from the

real object, is the category or are the categories taken as an empirical hypothesis about the very nature of the real object.

Using the same database, within the same application for Artificial Research by Application, the same Specific Artificial Intelligence could work in thousands of locations at the same time.

Thousands of robotic devices specialised in mineralogy, linked all together to the same Specific Artificial Intelligence, with the same Artificial Research by Application in mineralogy, using the same database: in thousands of locations around the Earth, or in space exploration on board of artificial satellites or spaceships, robotic devices specialised in mineralogy working in thousands of planets, satellites, asteroids, or comets, or any other celestial body; could allow us to have a deep knowledge about this specific science beyond Earth and our human limits, and what is really important, reducing constantly the margin of error through decisions more and more rationals.

This Specific Artificial Intelligence, specialised in mineralogy through Artificial Research by Application, could make thousands of thousands of hypotheses at the same time, making thousands of thousands of rational contrasts of hypotheses, using thousands and thousands of robotic devices taking measurements and preparing samples for further rational contrasts and rational decisions, wherever we would like to know the mineral structure of geological formations across the Earth or the entire universe.

And, at any time that any robotic device finds any real object that does not match anything in the database, it could then be possible the automatic inclusion of new discoveries in the database, after rational contrast. New discoveries are available automatically for any other robotic device.

This would mean that thousands of thousands of auto-replications through improvements in the database, adding new categories would be able to be possible at the same time. Under this supposition, the database could be replicated every minute or every second. The increment of knowledge in synthetic sciences and synthetic academic fields, thanks to the

automation of scientific research, would give us a very powerful tool in order to have incredible knowledge at a very high speed.

The second example of the database under such a Specific Artificial Intelligence for Artificial Research by Application is its possible application to particle physics.

The first stage of such a Specific Artificial Intelligence would be the creation of a database including a list of categories in quantitative terms for each kind of particle. Secondly, the replication process of all research skills for the formation and rational contrastation of empirical hypotheses: measuring any property of the real object, in this case, the measurement of the properties of any particle, and studying the similarities between empirical measurements from real particles and the quantitative description of every category. Those categories with a high level of similarity between them and a particle or group of particles can be formulated as possible empirical hypotheses about the nature of a particle or group of particles. Once the hypothesis is formulated, over a sample of particles according to the hypothesis, the hypothesis is rationally contrasted, and if it is true, within a rational margin of error, it is rationally accepted.

In case the particle found would have not matched with any category in the database, under the hypothesis that this kind of particle Is a new one, automatically, the artificial research should proceed to the collection of a sample of particles like this one in order to contrast, within a margin of error, that it is a new kind of particle not included yet in the database, so this new one should be included as a new category in the database, describing the new category according to the measurements taken from this new kind of particle as quantitative terms of description. The auto-replication of the database could be done automatically, something really important if thousands of robotic devices in thousands of laboratories and accelerators of particles across the world, or even astrophysics telescopes, would be working with the same database, in the same application of Artificial Research by Application, in the same Specific Artificial Intelligence.

The way in which the database would work is the same as the first example in mineralogy. Given a list of categories in quantitative terms as

a database, the replication of rational processes should allow the Artificial Research by Application the possibility that, after the measurement of the properties of a real object, the contrast between the measurements and the categories, and that or those categories with high similarity could be formulated as a possible hypothesis in order to contrast them. In case that after the measurements, the new object does not match with any category, the inclusion of the new object as a new category considering the measurements as the quantitative description of this new category. Inclusion that should be done after further contrastations with samples or particles like this one that could ensure that it is a new kind of category and not a mistake during the measurement process.

It is very important every time that some new real object does not match with any category in the database to discard that this has not happened as a result of a mistake in the measurement process, or for any other reason, such as robotic problems or mechanical problems in the robotic device which has taken the measurements. If gathering samples of real objects like the new one, all of them reveal the same characteristics, within the lowest margin of error, only then, automatically, the new category should be included in the database as a new category. According to the general quantitative properties common to all the samples collected from this specific new object.

Using the same Specific Artificial Intelligence for Artificial Research by Application in any synthetic science or synthetic academic field, thousands of thousands of robotics devices at the same time could work together online. So at the same time, it would be possible that the same Specific Artificial Intelligence for Artificial Research by Application could do as much research simultaneously as robotic devices could work with the same Specific Artificial Intelligence for Artificial Research in any synthetic science or synthetic academic field. What that means is that thousands of thousands of hypotheses could be formulated and rationally contrasted at the same time, making thousands of thousands of further rational decisions at same time, at the very same time that every minute, or every second, or even in a inferior period of time, the database in a Specific Artificial Intelligence for Artificial Research by Application in a synthetic science or synthetic academic field could be auto-replicated by itself through improvements in the database, including new categories based on new real objects found that would have not matched with the current ones.

The importance of the database in Artificial Research by Application is the fact that the same value that the previous bibliographical revision has in any human investigation in order to know what kind of advancements have been made in the field where the investigation is going to be done, in Artificial Research by Application all this previous work is made directly by the database because all new discoveries are already included automatically in the database, and after inclusion, ready and available for any other robotic device working with the same Specific Artificial Intelligence for Artificial Research by Application in any synthetic science or synthetic academic field where this application is useful.

If all discoveries in any synthetic science or synthetic academic field are completely available and ready to be used for other robotic devices, or any human scientists, or even human scientists could share their new discoveries directly into the database, followings investigations in the same synthetic field or synthetic academic field, would be easier to do, because all the new advancements and discoveries are completely ready and available automatically, through an automatic system of auto-replication that could improve, or even enhance, the database, every minute, or even every second.

The database in any specific synthetic science or synthetic academic field could be renewed constantly, including continually, without pause, new discoveries and advancements. The automation of all sciences, starting first with the synthetic sciences, could bring a permanent and automatic scientific revolution.

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